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(11)

EP 0 929 161 A3

(12)

## EUROPEAN PATENT APPLICATION

(88) Date of publication A3:  
05.12.2001 Bulletin 2001/49

(51) Int Cl.7: H04B 7/06, H04B 7/12

(43) Date of publication A2:  
14.07.1999 Bulletin 1999/28

(21) Application number: 99300047.0

(22) Date of filing: 05.01.1999

(84) Designated Contracting States:  
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE  
Designated Extension States:  
AL LT LV MK RO SI

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(30) Priority: 13.01.1998 US 6537

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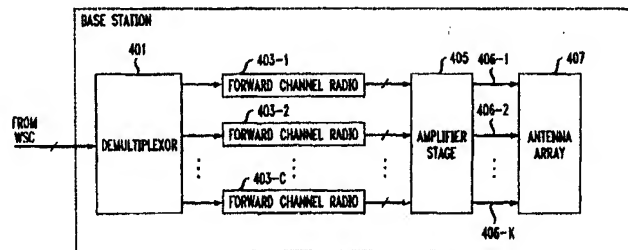
### (54) A multi-carrier CDMA transmission system with frequency and space diversity

(57) A wideband CDMA transmission system is disclosed that incorporates transmit diversity in both frequency and space. Some embodiments of the present invention are capable of transmitting a wideband signal with a high data rate to an appropriately-designed wideband CDMA wireless terminal and are also capable of transmitting a narrowband (e.g., IS-95 compliant) signal to a CDMA wireless terminal in the prior art. Some embodiments of the present invention are capable of co-existing in the same frequency spectrum that is allocated to existing narrowband wireless systems. And in some embodiments of the present invention the coded symbols from the interleaver are distributed among multiple carriers that are then radiated by spatially separated antennas.

An illustrative method of the present invention comprises: receiving a datastream of symbols that is to be transmitted to one wireless terminal; distributing at least some of the datastream of symbols to a first derivative datastream of symbols; distributing at least some of the datastream of symbols to a second derivative datastream of symbols; modulating the first derivative datastream of symbols onto a first carrier frequency to create a first modulated carrier; modulating the second derivative datastream of symbols onto a second carrier frequency that is different than the first carrier frequency to create a second modulated carrier; radiating the first modulated carrier from a first antenna; and radiating the second modulated carrier from a second antenna that is separated from the first antenna.

FIG. 4

400



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# EUROPEAN SEARCH REPORT

Application Number  
EP 99 30 0047

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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 15 October 2001	Examiner Helms, J
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EPO FORM 1503 (3.92 (pilot))



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# EUROPEAN SEARCH REPORT

Application Number  
EP 99 30 0047

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<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>&amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 (3.12.92) (P/4C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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